This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-27. (Canceled)

Claim 28 (Amended): The implantable [medical]sensor device according to claim [23]48, wherein the sensor element further comprises a plurality of cantilever members.

Claim 29 (Amended): The implantable [medical]sensor device according to claim 28, wherein the plurality of cantilever members are fabricated of at least one of a shape memory material, a superelastic material, an elastically deformable material or a plastically deformable material.

Claim 30 (Amended): The implantable [medical]sensor device according to claim 29, wherein the plurality of cantilever members further comprise a radiopaque material.

Claim 31 (Amended): The implantable [medical]sensor device according to claim 28, wherein the plurality of cantilever members have binary functionality differentially detectable by the detector.[.]

Claim 32 (Amended): The implantable [medical]sensor device according to claim 28, wherein the plurality of cantilever members exhibit a transition state between their binary functional states [by one of shape-memory, elastic, plastic or superelastic deformation].

Claim 33 (Amended): The implantable [medical]sensor device according to claim 32, wherein the transition state is actuated by the energy stimulus[*in vivo* physiological event].

Claim 34 (Amended): The implantable [medical]sensor device according to claim 33, wherein the energy stimulus is an *in vivo* physiological event [comprises]comprising a change in temperature, pressure, or surface coverage as encountered by the implantable medical device.

Claim 35 (Amended): The implantable [medical]sensor device according to claim 33, wherein the in vivo physiological event is selected from the group consisting of endothelialization, arteriosclerosis, pyrexia, hypertension and stenosis.

Claim 36 (Amended): The implantable [medical]sensor device according to claim 32, wherein [*ex vivo* detector further comprise one] the transition of the cantilever members between their binary functional states is detectable using a detector that utilizes a method selected from the group consisting of radiography, ultrasonography, RF imaging, and magnetic resonance imaging.

Claim 37 (Amended): The implantable [medical]sensor device according to claim 28, wherein at least some of the plurality of cantilever members have differing conditions of binary functionality than the other plurality of cantilever members.[.]

Claim 38 (Amended): The implantable [medical]sensor device according to claim 28, wherein at least some of the plurality of cantilever members further include passive transmitters that operate as detectable electromechanical switches.

Claim 39 (Amended): The implantable [medical]sensor device according to claim [28]36, wherein at least some of the plurality of cantilever members are interrogated with a first resonance frequency emitted by the detector and return a second, altered resonance frequency to the detector indicative of the state of the binary functionality of the plurality of cantilever members.

Claim 40 (Amended): The implantable [medical]sensor device according to claim 28, wherein at least some of the plurality of cantilever members further comprise a biochemical marker having selective affinity for a predetermined target.

Claim 41 (Amended): The implantable [medical]sensor device according to claim 40, wherein the predetermined target is selected from the group consisting of antibodies, cell surface proteins, growth factors and ligands.

Claim 42 (Amended): The implantable [medical]sensor device according to claim [23]48, wherein the sensor element further comprises a plurality of binding regions on a surface of the luminal or abluminal wall of the implantable sensor device[implantable substrate carrier].

Claim 43 (Amended): The implantable [medical]sensor device according to claim 42, wherein the plurality of binding regions further comprise a biochemical marker having specific affinity for a predetermined target.

Claim 44 (Amended): The implantable [medical]sensor device according to claim 43, wherein binding of the predetermined target to the biochemical marker at the plurality of binding regions causes an altered [state]conformation of the implantable [medical]sensor [device that is detectable by the detector].

Claim 45 (Amended): The implantable [medical]sensor device according to claim 43, wherein the predetermined target is selected from the group consisting of antibodies, cell surface proteins, growth factors and ligands.

Claim 46 (Amended): A method of detecting *ex vivo* an *in vivo* physiological event in a non-invasive manner, comprising the steps of:

implanting an implantable [medical]sensor device comprising a substrate carrier having a plurality of sensor elements comprising a plurality of cantilever members associated with the substrate carrier, the sensor element being capable of altering its [state]conformation upon encountering a predetermine physiological event;

interrogating the implanted [medical]sensor device with an *ex vivo* detector adapted to emit a signal and receive a returned signal from the implanted medical device; and

detecting the returned signal from the implanted medical device and determining the presence or absence of an altered [state]conformation of the sensor element from the returned signal indicative of the presence or absence of the physiological event *in vivo*.

Claim 47 (Amended): The method according to claim 46, the plurality of cantilever members have binary functionality that alter their [state]conformation upon occurrence of the *in vivo* physiological event and return [a shifted]an altered signal to the detector indicative of the *in vivo* physiological event.

Claim 48. (New) An implantable sensor device having a plurality of structural elements capable of expanding within an anatomical passageway comprising a sensor element that selectively detects an energy stimulus and responds to the detection of the energy stimulus by altering the geometry or conformational profile of the device body member.

Claim 49. (New) The implantable sensor device according to Claim 48, wherein the structural elements are fabricated of a forming material selected from the group consisting of shape memory materials, superelastic materials, plastically deformable materials, and elastically deformable materials.

Claim 50. (New) The implantable sensor device according to claim 49, wherein the energy stimulus is the result of an external energy source.

Claim 51. (New) The implantable sensor device according to Claim 50, wherein the energy stimulus comprises an exogenous energy stimulus selected from the group consisting of microwave, ultrasound, radio frequency, ultraviolet, infrared, magnetic resonance, x-rays, laser, and beta and gamma irradiation.

Claim 52. (New) The implantable sensor device according to Claim 51, wherein the exogenous energy stimulus results in localized heating in vivo.

Claim 53. (New) The implantable sensor device according to Claim 52, wherein the exogenous energy stimulus is a laser delivered by a laser catheter.

Claim 54. (New) The implantable sensor device according to claim 49, wherein the energy stimulus is a physiological stimulus.

Claim 55. (New) The implantable sensor device according to Claim 54, wherein the physiological stimulus comprises an endogenous energy stimulus selected from the group consisting of fluid pressure, fluid shear forces, body temperature, cellular binding and molecular binding.

Claim 56. (New) The implantable sensor device according to Claim 49, further comprising a sensor element that facilitates the interaction with the energy stimulus and mediates the altering of the geometry or conformational profile of the device body member.

Claim 57. (New) The implantable sensor device according to Claim 56, wherein the sensor element comprises a plurality of sensor regions integrally defined on at least one of a luminal or abluminal surface of the device body member.

Claim 58. (New) The implantable sensor device according to Claim 57, wherein the sensor regions are fabricated of a shape memory or superelastic material so that the properties of the sensor regions differ from that of the remaining structural elements.

Claim 59. (New) The implantable sensor device according to Claim 58, wherein the sensor regions exhibit a martesitic transition temperature higher than that of the remaining structural elements.

Claim 60. (New) The implantable sensor device according to Claim 59, wherein upon the sensor regions undergoing martensitic transformation, the sensor region stimulates the remaining structural elements to undergo martensitic transformation and effect a change in the geometry of the implantable sensor device.

Claim 61. (New) The implantable sensor device according to Claim 60, wherein the implantable sensor device displays an altered geometry that produces an image detectable using non-invasive imaging techniques.

Claim 62. (New) The implantable sensor device according to Claim 60, wherein the implantable sensor device displays an altered geometry that produces an image detectable using non-invasive imaging techniques.

Claim 63. (New) The implantable sensor device according to Claim 62, wherein the implantable sensor device further comprises structural elements having areas of inclusion of superelastic material, wherein the superelastic material is responsive to externally applied forces resulting in a martensitic transformation in the structural elements having areas of inclusion of superelastic material.

Claim 64. (New) The implantable sensor device according to Claim 63, wherein the externally applied forces is a force selected from the group consisting of ultrasound, irradiation, microwave, radio frequency, ultraviolet, infrared, magnetic resonance, x-rays and gamma irradiation.

Claim 65. (New) The implantable sensor device according to Claim 48, wherein the structural elements form the walls of the sensor device, the structural elements being fabricated of laminate layers of shape memory or superelastic material.

Claim 66. (New) The implantable sensor device according to Claim 65, wherein the structural elements are formed of at least two laminate layers, wherein a first laminate layer has a first martensitic transition point at normal physiological temperature and a second laminate layer has a second martensitic transition point that is greater than the first martensitic transition point.

Claim 67. (New): An implantable medical device comprising a substrate element fabricated of at least one of a shape memory and superelastic material, at least one transition point of the substrate element being capable of being induced by at least one of an endogenous energy stimulus selected from the group consisting of fluid pressure, fluid shear forces, body temperature, cellular binding and molecular binding, and exogenous energy stimulus selected from the group consisting of temperature, pressure, microwave, ultrasound, RF, ultraviolet, infrared, magnetic resonance, x-rays, beta and gamma irradiation.

Conclusion

No fee is believed due with this response, however, the Commissioner is hereby authorized to charge any fees that may be required, or credit any overpayment, to Rosenbaum & Associates, P.C. deposit account No. 18-2000.

Applicant believes all requirements have been met. Should the Examiner require any further information or wish to discuss any aspect of this response, the Examiner is encouraged to telephone the undersigned at the telephone number set forth below.

Respectfully submitted,

David G. Rosenbaum
Reg. No. 31,872

June 30, 2004

ROSENBAUM & ASSOCIATES, P.C.
650 Dundee Road
Suite 380
Northbrook, IL 60062
Tel. (847) 770-6000
Fax. (847) 770-6006
E-mail: drosenbaum@biopatentlaw.com